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BULLETIN
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Notes on the Botany of Humboldt County, California.

By E. R. Drew.

The mountainous country occupying the northwestern part of California is one of the many portions of our western country concerning which our botanical knowledge is as yet very incomplete. The author was fortunate in being able to spend a few weeks during July and August of last summer in a collecting trip in that region. My companion was a fellow botanist, Mr. V. K. Chesnut, and our tramp extended from Eureka, on the coast, through the central part of Humboldt County, to Hy-Am-Pum Valley, which lies just over the eastern line, in Trinity County. The country being very rough, with but little arable land, is sparsely settled, and after leaving the coast, the pack-mule is, with few exceptions, the only means of conveyance. It is all that could be desired by the hunter and camper, and the botanist is richly rewarded for the few difficulties which he must overcome. Still the principal sources of knowledge regarding the interior flora have been a few collections made by botanists on rapid trips, similar to our own. To this stock of knowledge we are glad to be able to add a small fragment.

Beginning at the coast, the most striking feature is the redwood belt, extending ten to twenty miles inland at that point and covered with dense forests consisting almost entirely of *Sequoia sempervirens*. The redwood seems to thrive only in the regions visited by frequent fogs from the ocean, and this dampness, together with the shade and the rich soil, are conditions favorable to the support of a rank undergrowth, which is remarkable for the small number of its species and their uniform distribution; both facts to be accounted for probably by the uniformity of condition required by the redwood itself. We collected only about twenty-five species in this region, and could have found nearly the whole number along any given mile of trail.

On occasional plateaus and gently rounded summits in the higher portions of the belt, and becoming more numerous further on, where the redwood gives place to oak and spruce, are small patches destitute of trees, commonly known as prairies. In these, of course, the flora is of an entirely different character from that of the forests, and is also much more varied, so that in the western part of the county the greater number of species are to be found in these small prairies.

Getting farther away from the coast, the country becomes continually more broken, and the flora more diversified. Very few species are found continuously over any considerable area, and rapid changes within short distances are continually met with. When the county comes to be thoroughly explored, it will be found to have a greater number of practically distinct floras than many of the larger states. The passage over South Fork Mountain, in the eastern part of the county, offers perhaps as sudden and peculiar a change of flora as can be found anywhere. The mountain is a ridge extending in a nearly north and south direction for several miles, and reaching an altitude of perhaps six thousand feet, the two sides being of nearly equal slope. The western side is bare of trees, except for an occasional clump of oaks, but well covered with brush, which consists chiefly of *Ceanothus cuneatus*, replaced just at the summit by almost impassable thickets of *C. divaricatus*. This mountain side proved to be one of our richest collecting grounds, many species growing in abundance which were found rarely or not at all elsewhere. On the level space of sandy soil at the summit occurred some species peculiar to such situations, as the magnificent *Lilium Washingtonianum* of Kellogg, *Calyptridium nudum*, Greene, and a large form of the showy *Pentstemon Menziesii*, Hook. Just before beginning the descent we found a few specimens of *Pentstemon Rattani*, Gray, and then came the change. We passed suddenly into the shade of a dense forest of coniferous trees, principally the Douglas Spruce, which covered the whole mountain side so thickly as to permit only occasional glimpses of the surrounding country; the few plants which flourished among the trees were chiefly Ericaceous, and there was created a general impression of having been suddenly transported through several degrees of latitude. It was here that we found the excellent new Lupine, described farther on under the name of *L. sylvestris.*

At the foot of the mountain lies Hy-Am-Pum Valley, a pleasant little spot, through which flows the South Fork of Trinity River. We explored the river banks and adjoining slopes for some twelve miles, to the mouth of Grouse Creek, and found the extensive and interesting flora to be practically distinct from anything west of the mountain, so that the summit of South Fork would seem to be a dividing line of some importance. In returning, we followed up Grouse Creek, around the northern end of the mountain, and crossed Redwood Creek near its source. Here the line of division is much less clearly defined, but seems to pass along the eastern ridge above the valley of Redwood Creek. From this point to the coast no new features of importance were noticed.

As a complete list of our collection would occupy too much space, only a few of the more important finds will be given, together with the descriptions of new species. I must here make acknowledgment of the kindness of Prof. E. L. Greene, without whose invaluable assistance many of the species could not have been satisfactorily determined.

Thlaspi Californicum, Watson. In fruit, Kneeland Prairie.

Viola Hallii, Gray. Same station, in very dry ground.

Arenaria macrophylla, Hook. Near the head of Redwood Creek, apparently rare.

Trifolium plumosum, Dougl. Banks of the South Fork of Trinity River, near Grouse Creek.

T. Howellii, Watson. Pilot Creek, west of South Fork Mountain. Discovered by Mr. Howell in southern Oregon during the previous year.

Hosackia decumbens, Hook. and Arn. Abundant on the eastern slope of Pilot Ridge.

Potentilla elata, Greene. The species was described from a single specimen from Napa Valley. We found two specimens near Grouse Creek.

Sedum radiatum, Watson. On rocks at Kneeland Prairie.

Ptilocalais gracililoba (Kell.), Greene. (*Calais gracililoba*, Kellogg, Proc. Cal. Acad. v. 48.) Described by Dr. Kellogg in 1873, from three specimens collected in Mendocino County, and has probably not been seen since. We found three specimens on the western side of South Fork Mountain.

Bellis perennis, L. Naturalized about Arcata.

Cnicus arvensis (L.), Hoffm. Introduced at Arcata, some six years ago, and has become firmly established.

Gaultheria Myrsinites, Hook. Near the head of Deer Creek.

Pentstemon Rattani, Gray. A small form, summit of South Fork Mountain.

Aphyllon pinetorum, Gray. Pilot Creek.

A. fasciculatum (Nutt.), Gray. A series of specimens collected between Kneeland Prairie and Mad River, almost connecting this species with *A. uniflorum*. One specimen is typical, with stem rising three inches above the ground, bearing six peduncles. Four have stems one or two inches long, bearing only two peduncles four to six inches long, lobes of corolla more spreading and brighter yellow. Four have stems barely an inch long, each bearing a single peduncle.

NEW SPECIES AND VARIETIES.

Ranunculus aquatalis, L., var. HISPIDULUS. Emersed leaves small, three-lobed, the lobes toothed, glabrous above, the lower face hispid with short, stiff bristles, which extend to the petioles and stipules. Otherwise as the var. *heterophyllus*.

In ponds at Jarnigan's, on Mad River, July 10.

LUPINUS ADSURGENS. 1 to 2 feet high, perennial, clothed with appressed silky pubescence: leaflets five to nine, as long as the petioles, cuneate-oblong, obtuse, mucronulate; stipules subulate; racemes rather short; bracts deciduous; keel naked, flowers light yellow.

Western side of South Fork Mountain, July 21.

LUPINUS SYLVESTRIS. Perennial, stem succulent, 2 to 3 feet high, erect, canescently tomentose throughout; leaves scattered, leaflets as long as the petioles, 1 to 1½ inches long, stipules slender; raceme 6 to 12 inches long, indistinctly verticillate; deciduous bracts exceeding the calyx; upper lip of calyx entire, saccate at base; keel naked, extending beyond the wings, the style becoming exserted; corolla cream color; ovules four to five.

Eastern side of South Fork Mountain near summit, July 21.

HOSACKIA DENTICULATA. Annual, 1½ to 2½ feet high, stout, erect, sparsely branched, pale green throughout; leaflets obovate, about six lines long, nearly all denticulate; the almost filiform lobes of the calyx longer than the tube; corolla pale yellow to nearly white, standard purplish; pods as long as the leaflets, nearly glabrous, three-seeded.

Along Mad River, near Jarnigan's, July 10. This plant has hitherto been included in *H. subpinnata*, Torr. and Gr., but is certainly a distinct species.

POTENTILLA LAXIFLORA. Stems decumbent or ascending, slender, a foot long, loosely branching above; leaflets ten or twelve pairs, 6 lines long, irregularly lobed or cleft, the two or three divisions narrow and acute: inflorescence loosely cymose; calyx campanulate, the triangular acute segments about equalling the tube, bracteoles slender, smaller than the segments, the whole about 3 lines broad; petals white, unguiculate, exceeding the calyx; stamens ten; filaments white, petaloid-dilated, unequal; carpels two to three, nearly 2 lines long, light brown, smooth and shining.

Hy-Am-Pum Valley, among young pines, July 25.

EPILOBIUM EXALTATUM. Root perennial, stoloniferous; stems 3 to 4 feet high, slender, terete, sparingly branched; leaves usually opposite or the floral alternate, lanceolate to ovate, acute, short-petioled, callous-denticulate, glabrous, thin and strongly veined: inflorescence open, corymbose-paniculate; calyx and capsule slightly pubescent; petals four lines long, bifid: seeds linear-oblong, smooth.

Growing rankly along brooks near Grouse Creek, August 1.

HEMIZONIA SCABRELLA. About 2 feet high, main stem zigzag with slender diverging branches, glabrous: leaves minutely scabrous; glands small, terminal, distinctly stalked: heads mostly terminal, nearly cylindrical, 4 lines high; rays three to five, three-parted, bright yellow; bracts of the receptacle five to eight, at length separable: disk-flowers variable in number, their akenes uniformly glabrous and without pappus, rarely fertile.

Hillsides near Grouse Creek, August 1. Has the habit of § Calycadenia, but with anomalous characters in the disk-akene.

SCORZONELLA ARGUTA. Leaves 6 to 12 inches long, 1 to 2 broad, entire or with few slender teeth: peduncles about 2 feet high: scales of involucre about twenty, inner lanceolate to ovate, long-acuminate, outer becoming broader and shorter; pappus white, 5 to 6 lines long, palea very thin, narrowly ovate, hardly ½ line long.

Eastern slope of Pilot Ridge, July 19.

ERIOGONUM SPECIOSUM. Suffrutescent, stems densely clustered; leaves small, broadly oblanceolate, acute at both ends, densely tomentose beneath, glabrate above; petioles 3 lines long: peduncles erect, nearly a foot high, bearing two to four elongated rays which are usually again divided, the nodes all leafy-bracted: involucres small, the acute lobes deflexed; flowers numerous, bright yellow tinged with purple, 6 lines long including the slender stipe; styles and filaments slightly hairy.

Gravelly banks of the South Fork of Trinity River, in Hy-Am-Pum Valley, July 23. Flowers very numerous and showy.

EUPHORBIA OCCIDENTALIS. Annual, diffuse, decumbent or prostrate; branches 4 to 8 inches long, glabrous, pale green or glaucescent; leaves obovate-oblong, inequilateral at base, 2 to 4 lines long, conspicuously serrulate above the middle and across the obtuse or truncate apex; stipules whitish, lacerate, ½ line long; involucres small, axillary, the glands with white or purplish margins, crenulate or minutely lobed: seeds ½ line long, ash-gray or almost white, the faces irregularly but not deeply wrinkled.

In sandy soil, Hy-Am-Pum Valley, July 23.

ALLIUM STENANTHUM. Bulb nearly spherical, the coats white, thin, transverse reticulations deeply and broadly sinuate: scape terete, 8 to 12 inches high; leaves usually two, sheathing below the ground, 1 to 2 lines wide, equalling the scape: bracts two, ovate, narrowly acuminate; pedicels twelve to twenty-five, 6 to 9 lines long; perianth segments white, ovate-lanceolate, long-acuminate, erect, scarcely spreading even in age, 5 to 6 lines long, twice as long as the stamens and style, the inner segments slightly denticulate; filaments dilated at base; ovary with conspicuous rather thin crests.

Along streams, eastern slope of Pilot Ridge, July 19.